School of Health & Exercise Sciences

HES 340: Methods of Data Analysis

Fall 2026
3 Credits

We respectfully acknowledge that the land on which this course is taught is the unceded, ancestral, unsurrendered land of the Syilx Nation.

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Office Hours: Fridays 11am-12pm

TAs: Eric Bennett, Lauren Finlay, Darci Gross
E-mail: Via Canvas
Office Hours: By Appointment

Lecture Time & Location

Time: Fridays 8am-11am
Location: EME 0050

Academic Calendar Course Description

Introduction to basic statistics and methods relevant to the analysis and interpretation of quantitative data pertaining to health and social well-being. Credit will be granted for only one of HES 340, HMKN 205 or STAT 121. [3-0-0]

Prerequisite: Either (a) HES 240 or (b) HMKN 206.

Methods of Delivery

In lectures, we will use a variety of learning methods, including lectures, group discussions, manipulation of data sets, the use of e-learning tools, and critical reflections on one's own research ideas. Asynchronous materials will help students solidify lecture information and provide opportunities to practice content learned.

Recommended Text

Field, A. (2024). *Discovering statistics using IBM SPSS statistics* (6th ed.). Sage Ltd.

Learning Outcomes

After completing this course, successful students will be able to:

1. Understand the foundations of statistical methods, including but not limited to central tendency, probability and the normal curve, sampling distribution techniques, population estimates, assumptions of statistical inferencing, and hypothesis testing techniques.

2. Calculate and demonstrate sufficient competence in basic quantitative data analysis.

3. Interpret results from health-related research that employs common statistical methods.

4. Create statistical analysis plans to answer research questions of interest.

Evaluation Criteria and Grading

Weekly Engagement Activities 8%
In-Class Activities 12%
Assignment: Critical Revision of a Research Article 20%
Midterm Exam 25%
Final exam 35%

Weekly Engagement Activities

The purpose of these activities is to evaluate Learning Outcomes 1 and 2. Throughout the semester, a total of 8 activities accompanied by practice questions will be posted on Canvas by the end of Friday each week (please see timeline provided below). The purpose of the activities is to review content covered in the previous week and provide students with the opportunity to practice critical thinking questions related to the course content. Completing each activity correctly will be worth 1% of the student's final grade. The activities will be available from Fridays until the **beginning of class the following week**. More information about asynchronous content and procedures will be given in class.

In-Class Activities

The purpose of these activities is to evaluate Learning Outcomes 1, 2, and 4. Throughout the semester, a total of 6 activities will be introduced and completed during lectures. These will be directly relevant to the topics of the week and will help students solidify information and apply what they are learning. Completing each activity will be worth 2% of the student's final grade. The activities are done in class, meaning there will **not be further opportunities to complete these if the student is absent.** More information about in-class activities will be given in class.

Assignment: Critical Revision of a Research Article

The purpose of this assignment is to evaluate Learning Outcomes 1 and 3. Students will be given a list of peer-reviewed, scientific articles relating to a sport or health-related field to choose from. Students are encouraged to choose an article that is interesting to them. Once the article has been identified, students will be asked to summarize and interpret the results section of the article. The summary will include but is not limited to the research question, types of hypotheses made by the authors, assumptions about the data, the number of groups and/or timepoints, the statistical analysis method(s) employed, the format in which the results were presented, and any conclusions and/or implications based on the results of the statistical test.

Further details and a detailed rubric will be provided to students via Canvas.

Midterm Exam

The purpose of this written midterm exam is to evaluate Learning Outcomes 1, 2, and 3. The written midterm exam will be completed in-person during lecture on **Friday, October 16th** (please refer to the timeline below). Students will have 90 minutes to complete the exam. The content included in the midterm will consist of all material covered up until the lecture before the midterm. More information about the midterm will be provided in class closer to the examination date.

Final Exam

The purpose of this written final exam is to evaluate Course Objectives 1, 2, 3, and 4. The final exam will be held during UBCO's final exam period, which is between **December 12th – 22nd**. Students will have 120 minutes to complete the exam. The final exam is cumulative, meaning all material covered in this course will be included. More information about the final exam will be provided in class.

Class Policies

Attendance

Lecture attendance is highly recommended as material discussed in class will be the substance of assignments and exams. Students who attend lectures achieve higher grades. Class participation is encouraged and has also been found to lead to higher grades. The lecture slides and other resources will be available on Canvas, but it is impossible to duplicate the discussions, activities, challenges and interactions that take place in the classroom.

If you are sick but still attending, please wear a mask to lecture. If you cannot attend or are unsure, please email your professor for guidance on how to catch up.

Late Policy

It is expected that weekly activities and assignments are submitted by the posted due dates. **These are firm deadlines.** In cases where assignments are late, 10% of the eligible grade will be deducted **per day**. Assignments will not be accepted for marking more than five (5) days past the due date.

There are certain extenuating circumstances that will allow for further extension of an assignment due date. These are: health concerns, family emergencies, and travel for team sports. Please note that the instructor will not make accommodations for work schedule or other extracurricular activities. Please reach out to your instructor **BEFORE** the upcoming assignment due date and the instructor will determine eligibility for further extension on a case-by-case basis. The instructor may require that you submit written confirmation depending on the circumstances.

Final grades are not negotiable; this syllabus is the contract you agree to by registering for this course. No extra or additional assignments will be permitted to increase a student's grade at the end of the term. All students will be treated equally. Grade appeals are subject to university policies.

Missed Exam Policy

The final exam period for Fall 2026 semester is from **December 12th-22nd**. If you need to miss the final exam for an extenuating circumstance, you must contact your instructor immediately (BEFORE the exam start) and apply for an out-of-time exam through the department and provide valid documentation of the reason for the missed final exam.

The Use of Artificial Intelligence

Students are permitted to use artificial intelligence tools, including generative AI, to 1) gather information, 2) review concepts, 3) brainstorm ideas, or 4) edit writing. However, students are ultimately accountable for the work they submit, and any content supported by an artificial intelligence tool must be cited via an AI statement. Use of AI tools is **not permitted for producing, writing, or answering** assignments, exams, or weekly activities.

Safety & Respect in the Classroom and Beyond

UBCO students have the right to work, learn and socialize in a supportive, safe, and healthy environment. The university is committed to developing a sense of community that is dedicated to creating a working and learning environment of the highest quality – one which is characterized by mutual respect, consideration, social and moral development of its members; and is free from harassment, discrimination and any form of disruptive behaviour or violence.

The university understands and recognizes that students have responsibilities related to appropriate student conduct. Students are responsible for reviewing relevant guidelines and policies.

Any student that demonstrates inappropriate behaviour; reckless behaviour that endangers themselves or others; or damages equipment will be asked to leave the class and, according to university policies, may be subject to further sanctions.

Please demonstrate professionalism and respect to the professor and other students, both in-person and virtually (i.e., e-mails). The professor of this course will ensure all possible steps are taken to guarantee a learning environment that is inclusive and equitable for all.

Tentative Course Timeline

Date	Topic	Assignment
Friday, Sep 11	Welcome to HES 340! Measurement, Variables, & Inferencing	
Friday, Sep 18	Organizing & Displaying Data Curve Characteristics	Weekly Activity 1 Due
Friday, Sep 25	Measures of Central Tendency Measures of Variability **In-Class Activity 1**	Weekly Activity 2 Due
Friday, Oct 2	The Normal Curve Statistical Inferencing	Weekly Activity 3 Due
Friday, Oct 9	Midterm Review **In-Class Activity 2**	Weekly Activity 4 Due
Friday, Oct 16	**Midterm Exam**	
Friday, Oct 23	Hypothesis Testing T-Tests **In-Class Activity 3**	
Friday, Oct 30	Error Rates ANOVAs **In-Class Activity 4**	Weekly Activity 5 Due
Friday, Nov 6	Correlations Simple Linear Regressions **In-Class Activity 5**	Weekly Activity 6 Due
Friday, Nov 13	**READING BREAK – NO CLASS**	
Friday, Nov 20	Multiple Linear Regressions Logistic Binomial Regressions **In-Class Activity 6**	Weekly Activity 7 Due
Friday, Nov 27	Nonparametric Tests Issues with Statistics	Weekly Activity 8 Due **Assignment Due**
Friday, Dec 4	Final Exam Review	

Campus Policies

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise, and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course. Careful records are kept to monitor and prevent recidivism.
A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at:
http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,0

Final Examinations

Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 27-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar:
http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to university, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.
http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014

Student Services Resources

UBC Okanagan Disability Resource Centre

The DRC facilitates disability-related accommodations and programming initiatives to remove barriers for students with disabilities and ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course, please contact the DRC at:

UNC 215 250.807.8053
email: drc.questions@ubc.ca
Web: www.students.ok.ubc.ca/drc

UBC Okanagan Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment based on BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination, or harassment please contact the EIO.

UNC 325H 250.807.9291
email: equity.ubco@ubc.ca
Web: www.equity.ok.ubc.ca

Student Wellness

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

UNC 337 250.807.9270
email: healthwellness.okanagan@ubc.ca
Web: www.students.ok.ubc.ca/health-wellness

Student Learning Hub

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies. Students are encouraged to visit often and early to build the skills, strategies and behaviors that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

LIB 237 250.807.8491
email: learning.hub@ubc.ca
Web: www.students.ok.ubc.ca/slh

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Safewalk

*Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at **250-807-8076**.*

For more information, see: www.security.ok.ubc.ca